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(71) Applicant: MEIDENSHA ELECTRIC MFG CO LTD

(72) Inventor: TERAJIMA MASAYUKI  
ASHIKAGA TADASHI

(54) MEASURING METHOD FOR PARAMETER OF INDUCTION MOTOR

(57) Abstract:

PURPOSE: To easily and surely perform an automatic measurement by applying a DC voltage to the primary input of an induction motor from a power inverter, measuring the primary input current and voltage of the motor, finding the primary parameters and calculating the secondary parameters based on prescribed equations.

CONSTITUTION: With transistors  $Tr_1$ ,  $Tr_6$ , etc. in an inverter 21 of the driving power source switched on and off, while a PWM waveform generating circuit 22 set with a definite voltage by a control circuit 11, DC voltage pulses are impressed on the windings U, W, etc. of an induction motor 1. Thus, the voltage and current are measured through a voltage and current detectors 12, 13, and from their ratio, the resistance  $r_1$  as a primary parameter is determined by the circuit 11. On the other hand, from the rising transient currents  $i_1(t)$ ,  $i_2(t)$  and the end current  $i_e$  of the DC current  $i$ , rising time constant  $T$  of the current  $i$  is determined, and the secondary resistance  $r_2$ , secondary inductance  $L_2$  as the secondary parameters are determined based on the equation 1. In this manner, an automatic measurement of the

parameters can be made easily and surely in a standstill state of the motor.

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$$\frac{r_1}{r_1 + r_2} = \frac{1 - e^{-\frac{1}{T} t_1}}{1 - e^{-\frac{1}{T} t_2}}$$
$$L_2 = T \cdot \frac{r_1 r_2}{r_1 + r_2}$$

